

## SINCUS NEWS

Sinclair Computer Users Society  
1229 RHODES ROAD  
JOHNSON CITY, NEW YORK 13790

--As of Feb 20, TUBBS is no more. Bob's business has grown to the point where he hasn't the time, we at SINCUS are glad for the opportunities to meet and hear Bob and to have used his BBS, we thank him and are sorry to see him go.

January 21, 1987, our regular monthly meeting started off with: Robert French, SYSOPS of TUBBS, talked about his BBS and the hows and whys of telecommunications. He discussed the volume of information available to mankind, and that this amount is doubling every 20 months. (Watch PBS, "Earth", "Nova", etc to get an idea of all the physical surveys of this world and our universe that collects reams of new data every day) To help in the exchange of this data telecommunications helps business and science and government transfer large volumes of data at hi speed and accurately. Us individual human beans can tap some of this data, via our little 300 and 1200 baud modems thru services such as Comuserve and the Source.

Note however the charges each exacts from our plastic. A group of computer users, subscribe to a thought of providing free or low cost bulletin boards and or data bases. After turning their computers over to the public, they then are responsible for what ever happens to appear on their BBS. If a copyrighted program appears without the permission of the author, the SYSOPS (System operator) is then liable for any loss of profits due to illegal pirating. Individuals have thought up and used abusive functions to BBS. This tends to cut down on the number of free-no charge- boards to the public. The SYSOPS pays for his computer, extra storage and BBS program. Some accept advertising, and some like a FIDO net, charge for the transmission of mail.

-Bob came quite prepared for the talk, with transparent overlays, showing the different screens on his system and handouts of local and club interest and free pens. A couple points he hit on that are new to me are 1) Thread - a system of tying common message base questions and answers together. 2) Edit function will help you with spelling! and how to use stack commands and that by uploading files, one can increase daily time available.

February 18, 1987, with about a dozen present, we held our monthly meet at the Vestal Public Library. Wes Brozowski brought along his US Spectrum, a British ZX Spectrum adapted for our 60Hz, 110v lines and our TV. About the size of a 2068 less the cartridge port, black with grey rubber chicklet keys and red print, it makes you happy Timex came along when they did! With Microdives hooked up, Wes demoed a couple games and Super Basic.

Clyde Tackley and your truly connected modem to modem, his with Mterm 2 on a cartridge, and me with Tiny Board loaded in. With Drs. Wes and Dave Schoenwetter, the matter of making the two connect was a five minute go around with Tiny Board. And soon Clyde was typing on MY screen just like if he went over the phone lines! This now makes two ways we have direct connected modems, both with Mterm, and now this way.

-Hi and hello to new members, David Smith, Johnson City NY; Stu Walton, Rowley MA; William Walker, Huntington WV; James Kerr, Dolton IL; Jack Deuber, Casselberry FL; Claude Schleyer, Albuquerque, NM; Harold Crandall, Oxford CT; Jim Willits, San Marcos CA; Larry Anderson, Davenport IA; G.T. Cook, Gainesville, FL; A. Kahale, Hoffman Estates, IL; Joan Kealy, El Paso, TX; and Bill Barnhart, Falls Church VA. To current

members, if your name/address label has a 3/87 or a 4/87, dues for the next 12 months are due. This is the only notice you will receive.  
-We are glad to welcome into our newsletter swap the Detroit Area TSUG and the Ottawa/Hull TSUG. We have dropped a couple groups for not carrying their half of the swap. Triangle TSUG, Hampton Roads TSUG, Las Vegas TSUG, ATSU of Columbus, Ohio and the Cincinnati TSUG. We have been mailing to these groups for over a year with nothing received from them.

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Last issue we carried a plea from Don Lambert for help with his ZX80, well I am very pleased to say that TWO members sent in schematics for the ZX80 and later we will carry the schematic for all. Thanks to all concerned!!

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March meet- our Treasurer, George Penney, will be giving a talk on his TS1000 program for his business. With this program, you can reprogram with four or five words in English yet and have the data already stored in memory be listed in a different relationship. George is a programmer from way back when not only was 16K of RAM alot, but it was about the most available, so he has learn well how to make the most with the least.

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Meet dates-March 18 and April 15 both at 7pm, at the Vestal Library-come early-snow might melt some-we have been REAL lucky this year-a couple meets have been sandwiched between some heavy snows-March has always been a bad month, and April is always up for grabs-so if we dont see you by April, then MAY for sure!

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NEW, NEWS, VIEWS and REVIEWS.....by Paul Hill  
Sinclair Computer Trivia-Is SIR Clive Married and if so what is his spouse's name?? See last page for answer(s). Anyone have any interesting reading material on Sir "C", send it on in.

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BACK ISSUES-several members have asked about such. Last October we ran out of a special run of back issues- they ran from Nov 1984 to current month. Due to not finding a copier at low price, and available for personal use, we will not be able to repeat a back issue offer. Current prices put the price in the range of \$3 per issue, and 15 back issues available.....so at these prices, I am not going to copy our back issues.

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NEWS:TS Horizons and the newsletter SYNAPSE will discontinue publishing this year, notice has gone out to subscribers and advertisers. Unlike past practice, where one folds the tent first, and then lets checks bounce, these people are showing class. If anyone has a current address as of Feb 1987 for SYNAPSE, please let me know, the PO keeps returning N/Ls mailed to them as "no such street". My last known address is: SYNAPSE, 642 North Street, State College, PA 16801. Robert Heil, editor, is just about single handedly going to meet the commitments of the group out of his own pocket.

NEWS:We have heard ZEBRA SYSTEMS was dropping their disc drives from Timex, now we hear ZEBRA will be no more! From "MERGE", TS-Spectrum Users, 1611 Rose Ave, Merced CA 95340..."after a few phone calls I discovered that they will soon be closing their doors, and may not make it to the 2nd Annual Computerfest in May"! I note they also mention E A Brown in the same bunch of past supporters. From others we learn that DAMCO is dropping the Waferdrive system as no one makes the microdrive cartridges for it.

VIEWS:Keep subscribing to the remaining mags- SYNCWARE NEWS,PO BOX 64, Jefferson, NH 03583- a year for \$16.95 and TIME DESIGNS 29722 Hult Rd.,Colton, OR 97017 a year is \$15 and support your user group.

NEW: Sir Clive announces a IBM Compatible lap-top portable, weighs 2 pounds, priced around \$350 this from RMG, Rod Gowen and CCATS "Plotter", Oregon City, OR. More data on this as received.



NEWS:256K RAM boards under development, Larken Electronics is reportedly one of two outfits. This from the Jan/Feb issue of TIME DESIGNS.

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- For past several months, I have been trying different methods-  
- of publishing this newsletter. Memographics usually are -  
- decent both cost and repro wise. Several pages are weak, a -  
- production problem, likewise too much ink. I have compounded-  
- the problem by not watching my borders. And in general mixing-  
- light and dark copy on the same page. With the last mailing -  
- I found that envelops will solve a couple problems that a -  
- few members have had, not getting the whole newsletter. So -  
- from now on, envelops ! If you are dissatisfied or have a -  
- problem reading the material, let me know what and I'll try -  
- to fix what ails you and try to keep it from occurring again.-  
- Thank you for your patience-your editor-PAH -  
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NEWS:From Bill Pierson, Germany comes word that Santie brought a IBM compatible for Christmas, so to share his wealth of old Sinclair goodies he sent us some 13 pounds of old issues of ZX Computing. Some are so old that the ZX81 is news! Thanks Bill, we'll still keep you on the mailing list even though....

NEWS:From Dave Harris, Korea, smoked his TS1500 awhile back and is ordered a QL which he plans to soup up. He wants to increase RAM by replacing the 64K RAM chips with 256K chips. Wants to know if anyone has done such. He has done similiar to a Atari 520ST by piggybacking 32, 256K chips, thus getting a 1Meg Machine. Any help appreciated....

FOR SALE:From David Ray, Tele:615-245-3720, Aerco DD in cabinet with power supply and 128K upgrade, disc controller and switching and documentation. It is PARTIALLY assembled....sell for best offer or trade for TS2068/Spectrum or peripherals

#### CLONE----TS2068 TAPE COPIER-----CLONE

```
1 REM █████ "rnd draw" █████
3 REM █████ YOU CAN NOT BREAK
THIS PROGRAM ! █████
4 REM From SYNC Mar/Apr 1984
5 PAPER 0: CLS : BORDER 0
10 DEF FN r(x)=INT (RND*x)
15 ON ERR GO TO 20
20 PLOT 127,87
25 LET a=FN r(150)-75
30 LET b=FN r(150)-75
35 LET i=FN r(7)+1
40 DRAW INK i,a,b
45 GO TO 25
```

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1229 Rhodes Road  
Johnson City, NY 13790

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Coming next issue SINCUS NEWS Proportional  
Printing on your 2040/and 2068 L/D O K for it!  
also more on the 2068 ROM Printout.  
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MARCH meet-George Penny to present a talk on  
writing a new language for your 1000 or 2068-  
short, sweet and easy to use! March 18 at the  
Vestal Public Library, 7pm

CLONE is a tape copier utility/header reader program available to members. It is sold nationally by several vendors under the name - CLONE. It enables you to make back up copies of virtually ANY 2068 or Spectrum program on the market today. This backup copy is legal, as long as you own the copyrighted program and keep the orginial purchase. We are simply selling a program which enables you to protect your valuable investment, the orginial tape. You can copy it with either the tape to tape method or the single tape recorder method. You can use the data from the header reader to make the conversion to disc or micro drive easier. This program has been on the market for two years, it works. Get your copy today, send a check for six dollars, and if your subscription is about due add eight more, we'll be glad you did-thank you.

CLONE----TS2068 TAPE COPIER-----CLONE

**The REAL Beginner's Guide to  
Modeming on a TS2068**  
Lesson 4 UPLOADING a BASIC Program on a BBS  
by P. Hill, RBMU\*

A step by step road map of how to get your computer in sync with thousands of other TS users.

Mterm	program	BBS
Xmodem----->	to UpLoad----->	file
1.	2.	3.

I am using a 2068/2050 modem with Mterm 2 modified with Loader V by Kurt Casby.

1. LOAD "loader"CODE: "mterm"CODE. This gets your xmodem code and mterm mc program in your TS2068. You cannot use the Basic "Loader V" with this UPLOAD function.
2. a) LOAD or MERGE "BASIC" program. Check beforehand that it is under 27K and NO machine code. If it is self or auto running take care to REM these instructions, as it may CLEAR part of the mterm or loader machine code. Do not >NEW< at this point, as this will wipe out the loader code.
  - b) PRINT USR 54016 >ENTER< to get into mterm.
  - c) Setup auto dial information, if you have not done this before.
  - d) Select A for Auto dial menu, and pick the BBS that you want. Again Capital letters seem to work best. Check your phonenumber to make sure you are connected.
3. a) After connecting, LOG on the BBS.
  - b) With many BBS, Entering a "U" gets you to the UPLOAD portion of the BBS. You will be asked to enter the name of the file you wish to send. Make up a 10 (max) letter name, with the last four letters reserved for ".BAS" such as TIMEXP.BAS. This name is compared with all the others to see if a duplicate is being entered. So do homework and check out the files first!
  - c) A certain amount of time is allowed giving you opportunity to start sending. If asked for transmission protocol, X for xmodem, and the BBS is ready to receive. Now you, have to:
    1. Control B >Caps Shift and B< gets you the menu across the bottom of the screen.
    2. >MK< gets you the main menu.
    3. >EK< gets you into BASIC.
    4. PRINT USR 24024 >ENTER< gets Xmodem going. Screen blanks, and soon little "+" walk across the screen. Each reps 128 successfully transmitted bits of data.
  - d) After completion, you will be asked for a short description of the program. Read other descriptions to get a handle for what is left by others.

That is even easier than downloading! With some BBSs you get additional time for the uploads. And Uploading time usually is not counted against the time allowed on the BBS. The file is usually kept in a recent upload file, and after house keeping by the SYSOPS weekly, your new file will appear in the appropriate sub file. The Sysops weeds out copyrighted material, and junk. If the BBS is on a IBM system, the SYSOPS probably cannot read any of the TIMEx file and hopes the files are legit. Please do not screw up what remains of free boards and the good intentions of others by misusing copyrighted programs.

\* RBMU=Real Beginner Modem User  
Lesson One is still being written



```

;Print pixel characters. Enter with DE pointing to pixel
; pattern, HL=display file address, BC=line/column
; Identical to Spectrum at 037F

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;Write the attribute byte
; Identical to Spectrum at 0BDB

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06B4 79    L06B4 LD  A,C
06B5 3D    DEC  A           ;Move over one coluan
06B6 3E21  LD  A,#21
06B8 200E  JR  NZ,L06CB    ;If there's still room on this line

06BA 05    DEC  B           ;Move down a line
06BB 4F    LD  C,A
06BC FDCB014E BIT  1,(IY+1)  ;FLAGS - Printer/Screen
06C0 2806  JR  Z,L06CB    ;If screen

06C2 05    PUSH DE
06C3 C0230A CALL 00A23    ;Dup printer buffer to printer
06C6 01    POP  DE
06C7 79    LD  A,C

06C8 09    L06CB CP  C           ;Check wether it's a new line
06C9 05    PUSH DE
06CA CC9007 CALL  Z,00790 ;Check on scrolling, if it is
06CD 01    POP  DE

06CE C5    PUSH BC           ;Make print masks for INVERSE & OVER
06CF E3    PUSH HL           ;B will be 00 for OVER 0
06D0 3A915C LD  A,(P_FLAG) ; FF for OVER 1
06D3 06FF  LD  B,#FF
06D5 1F    RRA
06D6 3801  JR  C,L06D9

06D8 04    INC  B

06D9 1F    L06D9 RRA           ;C will be 00 for INVERSE 0
06DA 1F    RRA           ; FF for INVERSE 1
06DB 9F    SBC  A,A
06DC 4F    LD  C,A
06DD 3E08  LD  A,#08
06DF A7    AND  A
06E0 FDCB014E BIT  1,(IY+1)  ;FLAGS - Printer/Screen
06E4 2805  JR  Z,L06EB    ;If screen

06E6 FDCB30CE SET  1,(IY+4B) ;FLAG52 - There's info in print buffer
06EA 37    SCF

06EB ED    L06EB EX  DE,HL

;Finally!!! We actually PRINT a character!!!
; Identical to Spectrum at 0BB7

06EC 08    L06EC EI  AF,AF'   ;Save the CY (=1 for printer)
06ED 1A    LD  A,(DE)       ;Present byte (if display file)
06EE A0    AND  B
06EF AE    XOR  (HL)       ;OVER requirements are set
06F0 A9    XOR  C           ;INVERSE requirements are set
06F1 12    LD  (DE),A       ;Ship out the result
06F2 08    EX  AF,AF'     ;CY still =1 for printer
06F3 3813  JR  C,L0708     ;If printer

06F5 14    INC  D           ;Here for screen. point to next
06F6 23    L06F6 INC  HL       ; pixel line in display file...
06F7 3D    DEC  A
06F8 20F2  JR  NZ,L06EC    ;...and loop if character not done

06FA EB    EX  DE,HL       ;Now fix up the attribute byte
06FB 23    DEC  H
06FC FDCB014E BIT  1,(IY+1)  ;FLAGS - Printer/Screen
0700 CC1007 CALL  Z,00710 ;Print the attribute byte
0703 E1    POP  HL
0704 C1    POP  BC
0705 0B    DEC  C
0706 23    INC  HL
0707 C9    RET

0708 08    L0708 EI  AF,AF'   ;Here for printer. Save CY again
0709 3E20  LD  A,#20       ;Character bytes are separated by 20
070B 83    ADD  A,E
070C 5F    LD  E,A
070D 08    EX  AF,AF'
070E 18E6  JR  L06F6

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0710 7C    LD  A,H
0711 0F    RRCA
0712 0F    RRCA
0713 0F    RRCA
0714 E603  AND  #03
0716 F658  OR   #58
0718 67    LD  H,A
0719 EDSB0F5C LD  DE,(ATTR_T)
071D 7E    LD  A,(HL)
071E AB    XOR  E
071F A2    AND  D
0720 AB    XOR  E
0721 FDCB5776 BIT  6,(IY+87)  ;P_FLAG - Paper=Compliment of INK
0725 2808  JR  Z,L072F    ;If we're not using PAPER 9

0727 E6C7  AND  #C7
0729 C857  BIT  2,A
072B 2002  JR  NZ,L072F

072D EE38  XOR  #38
072F FDCB5766 L072F BIT  4,(IY+87)  ;P_FLAG - INK=Compliment of PAPER
0733 2808  JR  Z,L073D    ;If not using INK 9

0735 E6F8  AND  #F8
0737 C86F  BIT  5,A
0739 2002  JR  NZ,L073D

073B EE07  XOR  #07
073D 77    L073D LD  (HL),A
073E C9    RET

;Print messages & Tokens. Enter with A register = message #
; in table, and DE = address of the table.
; Similar to Spectrum at 0C0A

;Here to print a message from a message table
073F E5    PUSH HL
0740 2600  LD  H,#00
0742 E3    EX  (SP),HL
0743 180A  JR  L074F

;Here to expand a token from the Token Table
0745 119800 LD  DE,#0098   ;Address of Token table

;The following 3 instructions "shift" the new tokens into the
; proper token sequence. Necessary because they don't follow
; the standard Spectrum tokens in their sequence.

0748 F5B8  CP  #B8
074A 3802  JR  C,L074E
074C D61F  SUB  #1F

074E F5    L074E PUSH AF

074F C07C07 L074F CALL 0077C ;Find the right table entry
0752 3809  JR  C,L075D    ;If no leading space is needed

0754 3E20  LD  A,#20
0756 FDCB014E BIT  0,(IY+1)  ;FLAGS - Suppress space before tokens
075A CC7607 CALL  Z,00776   ;Print leading space if FLAGS requires

075D 1A    L075D LD  A,(DE)   ;Get the character
075E E67F  AND  #7F       ;Wipe an inverted MSB, if present
0760 C07607 CALL 00776       ;Print the character
0763 1A    LD  A,(DE)       ;Get same character
0764 13    INC  DE         ;Point to next
0765 87    ADD  A,A        ;We're done if MSB is set
0766 30F5  JR  NC,L075D   ;Loop if not

0768 D1    POP  DE       ;Contortions to decide wether to
0769 FE18  CP  #18        ; print a trailing space
076B 2803  JR  Z,L0770

076D FE82  CP  #82
076F DB    RET  C

0770 7A    L0770 LD  A,B
0771 FE03  CP  #03
0773 DB    RET  C

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0774 3E20      LD  A,#20      ;Check if "scroll?" prompt is needed
                                     ; Identical to Spectrum at 0C88

;Allow for recursive printing by preventing wiping of registers
;(The character printer effectively CALLs itself when expanding
; a Token character)
; Identical to Spectrum at 0C3B

0776 D5      PUSH DE
0777 D9      RST #10      ;Save necessary registers
0778 D7      RST #10      ;PRINT the A register
0779 D9      RST #10
077A D1      POP  DE      ;Registers are restored
077B C9      RET

;Character string table search. Enter with DE=address of the
; table, A=entry number. Exit with DE=address of entry. Each
; entry has MSB=1 for last character.
; Identical to Spectrum at 0C41

077C F5      PUSH AF
077D EB      EX  DE,HL
077E 3C      INC  A

077F C97E    L07F BIT  7,(HL)
0781 23      INC  HL
0782 28FB    JR   Z,L077F

0784 3D      DEC  A
0785 20FB    JR   NZ,L077F

0787 EB      EX  DE,HL
0788 F1      POP  AF
0789 FE20    CP   #20
078B D8      RET  C

078C 1A      LD   A,(DE)
078D D641    SUB  #41
078F C9      RET

;Check whether the display needs to be scrolled
;

0790 FDC8014E BIT  1,(IY+1) ;FLAGS - Printer/Screen
0794 C0      RET  NZ      ;If printer, we never scroll

0795 111409   LD   DE,#0914 ;Forces a RETURN through the code to
0798 D5      PUSH DE      ; compute a printer/display address
0799 7B      LD   A,B
079A FDC80246 BIT  0,(IY+2) ;TV_FLAG - Printing to lower screen
079E C23D08   JP   NZ,#083D ;If not

07A1 FDBE31   CP   (IY+49) ;DF_S2
07A4 381B    JR   C,L07C1 ;Error if lower screen too small

07A6 C0      RET  NZ

07A7 FDC80266 BIT  4,(IY+2) ;TV_FLAG - Automatic listing
07AB 2816    JR   Z,L07C3 ;If not

07AD F05E2D   LD   E,(IY+45) ;BREG
07B0 1D      DEC  E
07B1 285A    JR   Z,L080D ;If time to scroll the listing

07B3 3E00    LD   A,#00 ;For channel "k" - lower screen
07B5 CD3012   CALL #1230 ;Make it the current channel
07B8 ED783F5C LD  SP,(LIST_SP)
07BC FDC802A6 RES  4,(IY+2) ;TV_FLAG - Auto Listing is done
07C0 C9      RET

;Error 5 - Out of screen

07C1 CF      L07C1 RST  8
07C2 04      DEFB #04

07C3 F03552   L07C3 DEC  (IY+82) ;SCR_CT scroll count is decreased
07C6 2045    JR   NZ,L080D ;If it's not time to scroll

07C8 3E18    LD   A,#18
07CA 90      SUB  B
07CB 328C5C   LD   (SCR_CT),A
07CE 2A6F5C   LD   HL,(ATTR_T)
07D1 E5      PUSH HL
07D2 3A915C   LD   A,(P_FLAG)
07D5 F5      PUSH AF
07D6 3EFD    LD   A,#FD ;"Internal" pointer to channel "k"
07D8 CD3012   CALL #1230 ;Make it the current channel
07DB AF      XOR  A
07DC 113308   LD   DE,#0933
07DF CD3F07   CALL #073F ;Prints "Scroll?"
07E2 FDC802EE SET  5,(IY+2) ;TV_FLAG - Clear lower screen
07E6 213B5C   LD   HL,FLAGS
07E9 CBDE    SET  3,(HL) ;L mode
07EB CBAE    RES  5,(HL) ;Reset keypress indicator
07ED D9      RST  #9
07EE CDCF11   CALL #11CF ;Get a keypress
07F1 D9      RST  #9
07F2 FE20    CP   #20 ;ASCII space
07F4 2845    JR   Z,L083B ;Done, if spacebar was pressed
                                     ;Works also on BREAK

07F6 FEE2    CP   #E2 ;STOP token
07F8 2941    JR   Z,L083B ;Done, if STOP was pressed

07FA F620    OR   #20 ;Convert to lowercase
07FC FE6E    CP   #6E ;ASCII "n"
07FE 283B    JR   Z,L083B ;Done, if M or n was pressed

0800 3EFE    LD   A,#FE ;Internal pointer to channel "s"
0802 CD3012   CALL #1230 ;Upper screen is current channel
0805 F1      POP  AF
0806 32915C   LD   (P_FLAG),A
0809 E1      POP  HL
080A 228F5C   LD   (ATTR_T),HL

080D CD3909   L080D CALL #0939 ;Scroll the screen
0810 FD4631   LD   B,(IY+49) ;DF_S2
0813 04      INC  B
0814 0E21    LD   C,#21 ;leftmost column

0816 C5      PUSH BC
0817 CDD609   CALL #09D6 ;Get disp file address for first char
081A 7C      LD   A,H
081B 0F      RRCA
081C 0F      RRCA
081D 0F      RRCA
081E E603    AND  #03
0820 F658    OR   #58
0822 67      LD   H,A ;HL=addr of attribute byte
0823 11E05A   LD   DE,#5AEO ;Handle scrolling attributes
0826 1A      LD   A,(DE) ; for bottom line
0827 4E      LD   C,(HL)
0828 0620    LD   B,#20
082A EB      EX  DE,HL
082B 12      L082B LD  (DE),A

082C 71      LD   (HL),C
082D 13      INC  DE
082E 23      INC  HL
082F 10FA    DJNZ L082B

0831 C1      POP  BC
0832 C9      RET

0833 80736372 DEFB #80,"scroll",?+80
0837 6F6C6CBF

;Error D : BREAK - CONT Repeats

083B CF      L083B RST  8
083C 0C      DEFB #0C

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## Modems and the Phone Line A Cautionary Note

by Wes Brzozowski, SINCUS

When the maker of the Timex modem sold the remainder of its uncased boards as surplus scrap, and that scrap was purchased by dealers who still support the machine, it was a windfall for many users. Finally, those who couldn't justify the cost of a new modem were trying them out.

Well, it was a bit of a crap shoot. Some of the boards were obvious rejects, but most could be got working with little or no effort. But simply getting one working is no reason to be complacent. The electronic horrors that occur in phone lines are much worse than those inside your computer, and the only thing separating their potentially dangerous voltages from your delicate computer (and even more delicate body)... is a piece of surplus scrap.

That piece of scrap may have undergone no final testing to assure that its safety features were working properly. The presence of obvious rejects means that there will also be a lot of "unobvious" rejects. This means that no quality control of any sort may be assumed for these boards. As a final note, it's possible that the lack of an FCC registration sticker makes it illegal to plug them into the phone line.

Now, I seldom write 'downbeat' stuff, and don't really want to do so now. But it's important to instill an attitude of caution among those who use these boards. The ranks of Timex users are thinning daily, and I don't want any of you to get "used up" before your time. We need each and every one of you.

I'm going to describe the Subscriber Line Interface portion of the modem, with emphasis on its safety features. This way, those of you who've been fixing them or adding RS-232 ports and such understand that some portions absolutely MUST NOT be played around with. I'll give no guarantee that this article covers all eventualities. It will show that you are at risk if you tamper with or use a tampered modem, and that even an untampered board is no guarantee of safety.

Let's first understand what happens on your Subscriber Line when you use your phone. Although it contains four wires, only two, the red and the green wires, are actually used. The incoming signals, as well as your own voice signals, are added together, and sent on just two wires. A clever circuit inside the phone makes sure that only a small portion of your own voice signal gets to your own earpiece.

When the phone handset is on the hook, a high impedance exists across the two wires. When you pick up the handset, it puts a low impedance across them. When the phone system sees that it can now put a certain level of DC current through your line, it sends a dial tone, and is ready to accept your dialing signals. At this point, the voltage across the wire is fairly low.

Pulse dialing (the rotary kind) is done by momentarily shifting the impedance from the low to the high value. One quick pulse will dial a "1". Two quick pulses will dial a "2", and so on. After you've dialed enough pulses, the phone system takes over and checks the phone line at the party you are calling.

If that party has a low impedance across its two wires, the line is busy, and you get a busy signal. If it has high impedance, the phone system sends them an alternating plus and minus 45 volt signal to ring the bell. The bell is connected across the same two wires, but has a capacitor in series, so that it won't allow DC to pass through. But the alternating signal has no problem making it ring. If they pick up the handset, the phone system detects the low impedance, stops sending the ring signal, and connects you. Now you can talk.

A redrawn schematic for the modem is included here. We'll be looking

at the far right hand portion, which handles these strange contortions from the phone line. As you can see, only the red and green wires actually go anywhere inside the modem circuitry.

When the relay K1 is energised, it closes a pair of contacts, and a low impedance DC path exists from the green wire, through R26, through the primary winding of T1, to R27, and to the red wire. This takes the modem "off hook". Momentarily opening the contacts will accomplish dialing. The components C22 and R28 across the relay contacts prevent an occurrence known as "dial tapping", where dialing one phone may cause an extension phone to ring slightly. In any case, the one relay can either take the modem off hook and dial, or it can "answer the phone", if it knows the phone is ringing.

The ring detector circuit consists primarily of the VM108, and U13, and 4N29. The VM108 is a full wave rectifier that changes the alternating 45 volts to something more like a constant 45 volts DC. Like a phone bell, the circuit has a series capacitor, so that it does not produce a DC path across the phone line.

The 45 volts "DC" makes its way to U13, which is an optoisolator. This device essentially contains an LED and a phototransistor. Lighting the LED turns on the transistor, without any direct electrical connection. This isolates the 45 volt ring signal from the 5 volt logic in the modem, preventing damage. Realize, now, that one corner of U13 can see 45 volts, while the rest of the chip is connected to circuitry that will blow out in an instant if that voltage gets through. If, through a loose bit of wire, or any other short circuit, you allow the 45 volts to get across that chip, you'll likely lose both the modem and the computer.

Note also that the ring signal can readily "light you up" if you happen to be touching the wrong part of the board when the phone rings. If you have to work on the modem, turning off the computer isn't enough: **UNPLUG IT FROM THE PHONE LINE!!!**

The capacitor in series with the VM108 is rated at 200 volts. NEVER substitute a capacitor with a lower rating. Much higher voltages than the ring signal can appear across the line, due to lightning, or man made equipment failures.

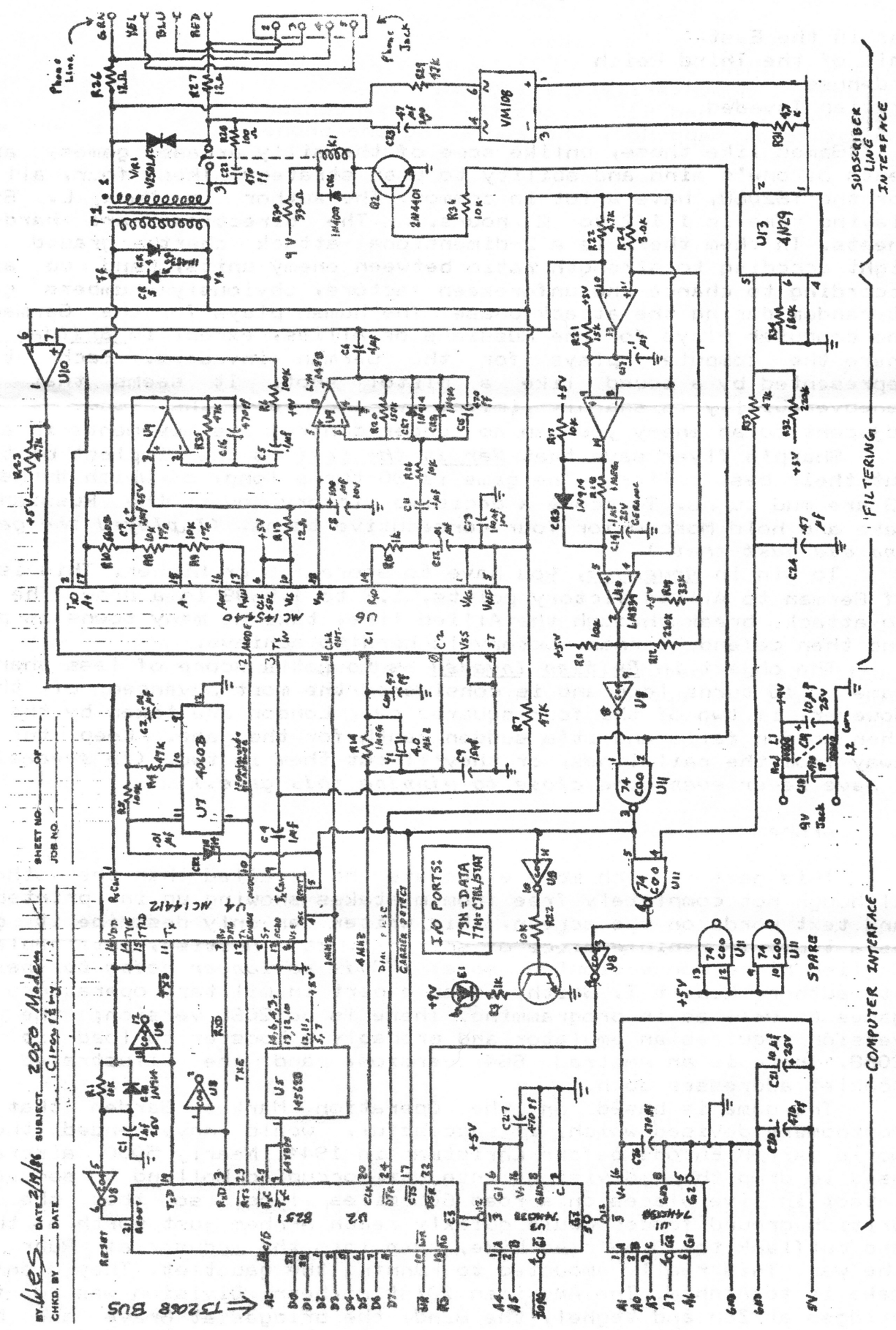
VR1 is a varistor, which prevents the extra high voltage spikes from getting in. But there's a range of voltages it can't handle. A spike of only 150 volts or so would continue straight through. Transformer T1 isolates the phone line from the analog modem circuitry, and diodes CR4 and CR5 are sufficient to get the lower voltage spikes that pass the varistor, limiting the signal to a volt or so. Because of the transformer and the optoisolator, the phone circuitry is completely isolated from the rest of the modem. Any spikes that try to get through the transformer are stopped by the varistor and diodes. NEVER try to run without them.

Unfortunately, the modem CAN run without them; particularly it can run without the varistor which doesn't do anything until a voltage spike appears. Worse, if the varistor fails, or was bad to begin with ( a certain percentage are, and we can't expect these boards to have been properly tested ). It simply won't provide any protection at all, although the modem will continue to work happily right down to the fatal moment. The moral here is that you shouldn't even think of running one of these boards during a thunderstorm, when one is possible, or one might be in the distance. Even then, there's no guarantee of a clean phone line. Surge suppressors on your power line won't help here; if your phone line is unguarded through a bad varistor, you are vulnerable.

I am really sorry if this throws "cold water" on anyone's enthusiasm. I prefer to encourage enthusiasm, but everyone must be aware of the risks that may accompany these modem boards. A scrap disk drive or printer interface wouldn't have the same problems, as they're not hooked to such a hostile environment as the phone system. Modems are different. If you intend to use one of these boards, PLEASE be careful.



BY: *Wes* DATE: *2/11/81* SUBJECT: *2020 Modem* SHEET NO. *1* OF *1*  
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# WAR GAMES REVIEW

by Scott Eddy, SINCUS

War in the East  
Fall of the Third Reich  
Ardennes  
Britian Invaded

Games like these, unlike some of the silly arcade games, are real tests of one's mind and ability to plan strategy. These four, all written for the TS2068, have a lot in common. The author is Mark L. Streuber. Playing time is 1 1/2 to 2 hours. The directions are hard-to-read sheets. In them there is a 2-dimensional attack chart, graded left to right according to strength ratio between enemy units, and up and down according to chance and unforeseen factors, obviously numbers generated at random during the attack phase. The human plays for the Germans, and the computer plays for the Russians or Allies, except in Britian Invaded, where the computer plays for the German invaders. Each attack is represented by a sound like a pistol shot. It seems that tactical maneuverability is sharply limited by the fact that once a unit is adjacent to an enemy you can no longer control its movements in any way.

Sharp's flyer says that War in the East is the simplest of the four but their best seller. The game is 30 turns long, of which turns 12 and 13 are mud turns. To score a decisive victory over the Russians, must take and hold Moscow for four consecutive turns. (*I played the game once and did just that.*)

To win in Ardennes, you have to score 1.6 or higher. This is a ratio of German to Allied victory points. 1.3 to 1.5999 is a draw. The idea is to attack, break through the Allied line, take as many towns as possible, and then defend. German victory is hard to achieve.

The object in Britian Invaded is to get a score of less than 1. The game is 15 turns long and is considered the most advanced of the four. However, if two of the four squares over London are taken by the Germans, then London falls and it's sudden death for the game. Keep the Germans away from the rail lines, or they'll cut them in two. (*In several tries, I have never even come close to winning this game.*)

## Arnhem

This game is much more elaborate and detailed than the others, and although not completely free from mistakes showing up in printed titles and text words on the screen, this writer can only describe it generally as a truly incredible piece of software. It's British, obtainable through English Micro Connection[ed. note: EMC is no longer doing business], and its author, Robert T. Smith, is an expert in military operations and war games as well as in programming. There is no 2068 version; the Spectrum version requires an emulator and probably a booster to load it in your 2068. There is an Amstrad 664 version, and the illustrated 24 page booklet addresses both.

The game is based on the Operation Market Garden that General Montgomery devised which, if successful, would have ended the Second World War in Europe before Christmas in 1944. Nearly 5000 aircraft were used to drop three divisions into Nazi occupied Holland to secure bridges intact in five places on a road 60 miles long, so that the invading British ground forces could quickly reach Arnhem just north of the Rhine and outflank the Siegfried Line, turn into the industrial Ruhr and end the war. This really amounted to running the gauntlet. They didn't quite make it to Arnhem. The American 101st Airborne Division was to take the bridges at Zon and Veghel, the 82nd, the bridges at Grave and Nijmegen,



and the British 1st, the bridges at Arnhem, also known as The Bridge Too Far, the name of the motion picture based on this historical episode. The Germans had retreated north in such disarray as to suggest that the plan would work, but they were quite strong in Holland, with two Panzer divisions stationed in the Arnhem area.

This game is really five, each of which can be played with one player (with the computer playing for the Germans), or with two.

1. Advance to Einhoven: - 7 turns, less than one hour; clear the road of Germans.
2. Operation Garden: - 10 turns; takes the ground forces as far as Grave.
3. Operation Market: - 26 turns; covers Nijmegen and Arnhem.
4. The Bridge Too Far: - 15 turns; involving only the British 1st Airborne Division. This is almost impossible to pull off. The Germans just keep pouring in.
5. Market Garden: - 26 turns; the whole battle; takes 8 to 10 hours to play.

At the end of each turn--there are three turns for each day--you have the option of continuing the game, saving or loading. Also, you are asked if you are playing in black and white. This is slightly misleading, as the only difference is that, in color, the British units, and the border during the British turn, is yellow instead of blue like for the Americans.

Each turn has three phases. Phases 1 and 3 are for the motorized units and phase 2 is for the other units. Each unit can move or dig in during each phase, but not both. It can only attack once during a turn, however. It can bombard if it's artillery; how far depends on whether it's motorized or not, or if it's airlanding artillery. It can travel if its on a road. You can give it orders to go anywhere, as long as it's on a road. It will go ten spaces during each phase until it gets there, and you can always intercept and change the orders. It can change size from the regular 4-square size to condensed, for going over bridges. There are many kinds of units, and each unit is individually presented in turn with its name and division (as long as it hasn't been wiped out), and, if you ask for it, a complete report on its strength, effectiveness, morale, attack modifier, and unit size. Units arriving by air can be dropped anywhere you put it, as long as it's in open terrain. (No hanging from trees or church steeples.)

It's easier to let the Germans get on the road than it is to get them off it once they park behind a bridge. (I find my chances of winning for the Allies to be just about nil if I also move the Germans in a two player game.)

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A very big thank you to Scott Eddy and Wes B. for their fine contributions to this month's letter- as the editor I dont mind the job of editing, but I need YOU TO GIVE me something to EDIT so you dont have to read MY newsletter- but YOUR newsletter- INPUT Your ideas, thoughts, questions. Businesses, groups, mags are shutting their doors because of lack of interest I hope you will help soon Keep our doors open- PAH

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<<<EMERGENCY>>>

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ANSWERS to question on Sir Clive on page 2; 1)Yes and 2) Anne (Source of Data-TIME, Jan 3,'83, page 29)

IBM is announcing a whole new line of pc's in early April, all new software, hardware a whole new ball game for the clones, users, and Apple will probably come out ahead in the office sales...every four years a whole new system? Can IBM do it.....

OPTIPACK for a closer look

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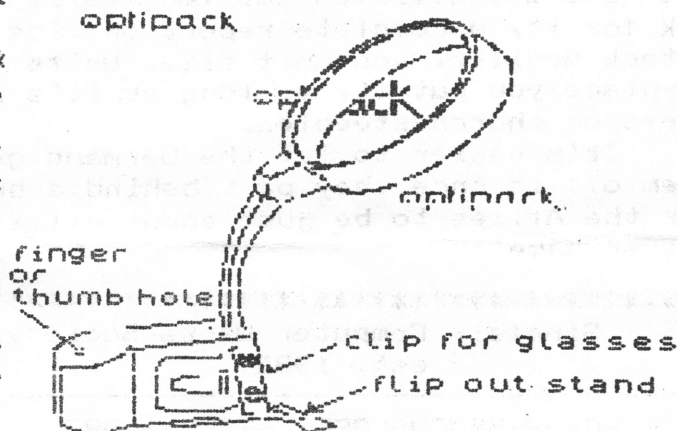
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